

Amendments to the Claims:

The following listing replaces all prior versions and listings of the claims in the application:

Listing of Claims:

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1. (Currently amended) A plug and play computer system, comprising:
 - a) a computer having a visual display and at least one exterior serial bus port for coupling at least one peripheral device to said computer;
 - b) an operating system residing on said computer programmed to dynamically configure the computer system, said operating system having a ~~first~~ subroutine for generating a first internal configuration message indicative of said operating system sensing a change in the number of devices coupled to said computer and a ~~second~~ subroutine for generating a second internal configuration message indicative of said operating system completing a configuration process; and
 - c) a configuration notification program residing on said computer for receiving said first and said second internal configuration messages and creating a visual display for ~~promptly~~ notifying the user within a fraction of a second when it is unsafe to couple or uncouple a plug and play device to said computer.
2. (Currently amended) The system of Claim 1, wherein said configuration notification program comprises:
 - a message handler residing on said computer, said message handler hooking said first and said second internal configuration messages, said message handler including a message analyzer unit and a state determination unit arranged to provide a first output signal when the configuration process is in progress and a second output signal when the configuration process is completed; and
 - an indication unit residing on said computer and coupled to the output of said message handler, said indication unit generating a visual display notifying the user when it is unsafe to couple or uncouple a plug and play device to said computer.
3. (Original) The system of Claim 2, wherein said indication unit generates a first display indicating that it is safe to remove or insert a device, a second display corresponding to

notification that the configuration process is in progress, and a third display corresponding to notification that the configuration process is complete.

4. (Original) The system of Claim 2, wherein said system utilizes a universal serial bus interface and wherein said serial bus port is a universal serial bus port.

5. (Original) The system of Claim 4, further comprising a compound hub and wherein said compound hub is coupled to said port via a universal serial bus cable.

6. (Currently amended) The system of Claim 1 4, wherein said computer includes an ~~speaker~~ audio output port and said indication unit generates an audio signal to said audio output port indicative of the status of the configuration process.

7. (Currently amended) A computer system ~~for improving the reliability of universal serial bus (USB) interface plug and play peripheral devices~~, comprising:

a) a computer having at least one ~~USB downstream~~ port;

b) a compound hub having an ~~upstream~~ USB connector coupled to said USB port of said computer via a USB cable, said hub having at least one ~~downstream~~ USB connector port and at least one non-USB peripheral device port;

c) an operating system with USB interface capability residing on said computer, said operating system generating a ~~first~~ subroutine for generating a first internal configuration message indicative of said operating system sensing a change in the bus topology and a ~~second~~ subroutine for generating a second internal configuration message indicative of said operating system completing a configuration process for said bus topology;

d) a message handler residing on said computer for hooking said first and second internal configuration messages, said message handler including a message analyzer unit and a state determination unit arranged to provide a first output signal when the configuration process is in progress and a second output signal when the configuration process is completed; and

e) an indication unit residing on said computer and coupled to the output of said message handler, said indication unit generating a visual display within a fraction of a second of the moment when said first or second output signals are generated by said message handler notifying the user whether it is unsafe to remove or insert a plug and play device.

8. (Original) The system of Claim 7, wherein said indication unit generates a first display indicating that it is safe to remove or insert a device, a second display corresponding to notification that configuration is in progress, and a third display corresponding to notification that the configuration process is complete.

9. (Currently amended) The system of Claim 8, wherein said compound hub has a plurality of non-USB peripheral device ports for replicating the function of at least one peripheral device port not attached to said computer, whereby the total number of connectors attached to said case is reduced.

10. (Original) The system of Claim 9, wherein said compound hub replicates the function of a mouse port, a serial port, a printer port, and a keyboard port whereby said computer does not require said peripheral device ports.

11. (Currently amended) A method of providing notification of the status of a configuration process of an operating system of a computer coupled to peripheral devices, comprising the steps of:

(a) detecting an internal configuration message generated by the operating system whenever the number of the peripheral devices coupled to the computer changes;

(b) determining if said internal configuration message corresponds to a change in the number or type of said peripheral devices requiring that a user be notified;

(c) notifying the user within a fraction of a second that a configuration process is in progress;

(d) detecting an internal configuration completion message generated by the operating system when the a peripheral device configuration process is completed;

(e) determining if said internal configuration completion message corresponds to a change in the number or type of said peripheral devices requiring that the user be notified that the configuration process is completed;

(f) notifying the user that the configuration process is complete within a fraction of a second of determining that said internal configuration completion message requires that the user be notified; and

(g) notifying the user that it is safe to change the number or type of peripheral devices

coupled to the computer.

12. (Currently amended) A method of notifying a computer user of the status of a reconfiguration process initiated by coupling or uncoupling a peripheral device to a computer via a universal serial bus connector (USB), comprising the steps of:

(a) providing an operating system that automatically detects configures the computer whenever a change in the number or type of peripheral USB devices coupled to the computer via said USB connector changes, said operating system generating an internal configuration detection message whenever the number or type of peripheral devices coupled to the computer via said USB connector changes such that the a device configuration process is initiated and a configuration completion message when the device configuration process is completed;

(b) hooking said internal configuration detection message;

(c) determining if said configuration detection message corresponds to a change in the number or type of said peripheral devices requiring that a user be notified;

(d) notifying the user within a fraction of a second that a device configuration process is in progress;

(e) (d) hooking said internal configuration completion message;

(f) determining if said configuration completion message corresponds to a change in the number or type of said peripheral devices requiring that the user be notified that the configuration process is completed;

(g) (e) notifying the user that the device configuration process is complete; and

(h) notifying the user and that it is safe to change the number or type of peripheral devices coupled to the computer via said USB connector.

13. (Currently amended) A method of reducing the frequency of avoiding universal serial bus crashes in a computer system comprised of a computer coupled to a compound hub via a USB cable, the method comprising the steps of:

a) providing a USB configuration notification unit having a message handler and an indication unit, said configuration notification unit monitoring internal configuration messages generated by an operating system related to a configuration process, said configuration notification unit providing a computer display output indicating when a configuration process is in progress for a USB device;

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~~b) changing the number of peripheral devices coupled to said hub; and~~
~~c) waiting until said configuration notification unit indicates that configuration is~~
~~complete before changing the number of devices coupled to said hub~~
wherein said computer display output is updated in real time so that a user is provided
information in real time concerning whether it is safe to plug or unplug a USB device to the
computer system

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14. (New) The method of claim 13 wherein said computer system comprises a graphical user interface including a representation of a system tray, and said computer display comprises an icon which is resident in said system tray.

15. (New) The method of claim 13 wherein said computer display output comprises at least two unique indicators, one of said indicators for alerting the user that a device connected to the computer via a USB port is being configured and another of said indicators for alerting the user that it is safe to plug or unplug a device to said computer via said USB port.

16. (New) The method of claim 15 wherein said computer display output comprises a third indicator for advising the user that device configuration has been completed.

17. (New) The method of claim 14 wherein the color of said icon is changed by said configuration notification unit depending on the state of said USB port and the configuration state of the devices coupled or uncoupled to said USB port.

18. (New) The method of claim 14 wherein textual information is provided within said icon depending on the state of said USB port and the configuration state of the devices coupled or uncoupled to said USB port.

19. (New) The method of claim 13 wherein said real time information is provided within a fraction of a second.

20. (New) The method of claim 19 wherein said real time information is provided within a small fraction of a second.

21. (New) The system of claim 2 wherein said operating system provides a graphical user interface having a system tray, and wherein said indication unit comprises an icon which is resident in said system tray.

22. (New) The system of claim 21 wherein said icon displays a first color when it is safe couple or uncouple a plug and play device to said computer system and displays a second color when it is unsafe to couple or uncouple a plug and play device to said computer system.

23. (New) The system of claim 3 wherein each of said first, second and third displays are located in a system tray of a graphical user interface.

24. (New) The system of claim 6 wherein said audio output port is coupled to a speaker.

25. (New) The computer system of claim 7 wherein said visual displays are located in a system tray of a graphical user interface.

26. (New) The computer system of claim 8 wherein said visual displays are color coded.

27. (New) The method of claim 11 wherein notice is provided whenever a device is coupled to the computer via a USB port, such that the user is alerted in real time whether it is safe or unsafe to change the number of devices coupled to the computer via said USB port.

28. (New) A configuration notification program for enhancing the operation of a computer system having at least one USB port and an operating system having a graphical user interface, said operating system having the capability of monitoring said USB port, generating an internal message when a device is coupled to the computer via said USB port, configuring a device coupled to the computer via said USB port, and generating an internal message indicating that configuration of the device has been completed, said program comprising:

- a message handler for hooking said internal messages,
- a indication unit for generating and displaying in real time information indicating whether a device coupled to said computer via said USB port has been configured, such that a user of the computer is alerted whenever there is an enhanced risk that coupling or uncoupling a device to said computer via said USB port will cause a system crash because a configuration process is underway.

29. (New) The notification program of claim 28 wherein said indication unit generates a unique display indicating that it is safe to couple or uncouple a device to said computer via said USB port.

30. (New) The notification program of claim 28, wherein said graphical user interface comprises a system tray and wherein said indication unit displays an icon in said system tray indicating in real time whether a device coupled to said computer via said USB port is being configured.